



COMMONLY OWNED CLAIMS

1. (Currently Amended): A non-naturally occurring laser light source offering precise control over its fabrication and operation comprising:
- a man-made cage, up to 100 nanometers in diameter, defining a calculated, artificial, environment-isolating cavity that is bioengineered and formed from a plurality of artificially-induced self-assembling purified Clathrin protein molecules,
- and
- one or more man-made cargo elements calculatedly located within the man-made cavity, wherein at least one of the cargo elements contains a man-made, artificially configured fluid and or a quantum dot,
- wherein the cargo element cavity and or its contained fluid internally and calculatedly reflects one or more artificially selected wavelengths of light in response to one or more artificially selected and induced frequencies of electromagnetic excitation,
- and
- wherein the non-natural laser light source, by human design, emits one or more photons of specified frequencies of light in response to an one or more purposely induced types of stimuli, stimulus resulting in controlled lasing that is not practically utilized in naturally occurring systems, because by definition the latter do not offer the required precise control over their fabrication and operation,
- and
- which stimuli can further have the optional effect, by human design, of calculatedly deforming the cargo element cavity in order to tune its Q value and resonant frequency in a purposely controlled fashion.
2. (Currently Amended): A non-naturally occurring laser light source according to claim 1 comprising,
- artificially configured receptors for artificially capturing and calculatedly positioning one or more artificially configured cargo elements within the man-made self-assembling protein cavity such that it enables non-natural placement of one or more cargo elements

6 with minimal inter-element spacings, thereby allowing dense cargo element packing and
7 with minimal inter-cargo interference.

1 3. (Currently Amended): A non-naturally occurring laser light source according to claim 2
2 comprising,

3 an artificial vesicle located within the artificially configured cage and enclosing one or
4 more artificially configured cargo elements, wherein the artificially configured receptors
5 extend through the man-made vesicle to capture and calculatedly position a artificially
6 configured cargo element within the man-made vesicle such that it enables non-natural
7 placement of one or more cargo elements with minimal inter-element spacings and with
8 minimal inter-cargo interference.

1 4. (Currently Amended): A non-naturally occurring laser light source according to claim 3
2 comprising,

3 artificially configured adaptors calculatedly disposed between the receptors and the
4 artificially configured cage and artificially binding to the one or more artificially
5 configured receptors such that it enables non-natural placement of one or more cargo
6 elements within the man-made vesicle.

1 5. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 comprising,

3 a man-made vesicle located within the artificially configured cage and artificially and
4 calculatedly enclosing one or more artificially configured cargo elements.

1 6. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 comprising,

3 artificially configured molecular tethers for calculatedly capturing and non-naturally
4 positioning one or more artificially configured cargo elements within and or outside the
5 man-made cavity.

1 7. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 comprising,

3 artificially configured direct cage bonding for calculatedly capturing and non-naturally
4 positioning one or more artificially configured cargo elements within and or outside the
5 man-made cavity.

1
1 8. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 further comprising,
3 artificially configured receptors, molecular tethers and direct cage bonding for
4 calculatedly capturing and non-naturally positioning one or more artificially configured
5 cargo elements within and or outside the man-made cavity.

1 9. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 further comprising,
3 one or more artificially configured cargo elements forming a non-permeable, calculated,
4 man-made cavity.

1 10. (Currently Amended): A non-naturally occurring laser light source according to claim 3
2 further comprising,
3 a man-made vesicle forming an artificial, non-permeable, calculated, man-made cavity.

1 11. (Currently Amended): A non-naturally occurring laser light source according to claim 3
2 comprising,
3 a vesicle defining a man-made cavity located within the artificially configured cage,
4 wherein a artificially configured fluid and or ~~a~~ artificially configured quantum dot are by
5 design contained in the man-made vesicle cavity.

1 12. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the artificially configured self-assembling cage is man-made to be electrically
3 neutral and that the cage calculatedly inhibits charge transfer between the man-made cage
4 and its enclosed, artificially configured cargo elements.

1 13. (Currently Amended): A non-naturally occurring laser light source according to claim 3,
2 wherein the artificially configured vesicle is man-made to be electrically neutral and that
3 the vesicle calculatedly inhibits charge transfer between the man-made vesicle and its
4 enclosed, artificially configured cargo elements.

1 14. (Currently Amended): A non-naturally occurring laser light source according to claim 4,
2 wherein the artificially configured receptors and adaptors are by human design
3 electrically neutral and calculatedly inhibit charge transfer between the man-made vesicle
4 and artificially configured cage and their enclosed, artificially configured cargo elements.

- 1 15. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the artificially configured cage calculatedly and by human design reduces natural
3 and man-made contaminant background radiation to artificially configured cargo carried
4 within the man-made cage.
- 1 16. (Currently Amended): A non-naturally occurring laser light source according to claim 3,
2 wherein the man-made vesicle by human design reduces natural and man-made
3 contaminant background radiation to artificially configured cargo carried within the
4 vesicle.
- 1 17. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 comprising, a artificial, self-assembling framework of artificially configured cages ~~to that~~
3 by human design structurally support one or more self-assembling artificial light sources
4 in order to produce a man-made design.
- 1 18. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 comprising an artificially configured, self-assembling, deliberately electrically neutral
3 substrate of artificially configured cages to structurally support one or more of the
4 artificially configured self-assembling, artificially configured light sources, forming a
5 man-made design.
- 1 19. (Currently Amended): A non-naturally occurring laser light source according to claim 1
2 comprising, an artificially configured self-assembling framework of artificially
3 configured cages to purposely structurally order one or more self-aligning artificial light
4 sources, forming a man-made design.
- 1 20. (Currently Amended): A non-naturally occurring light source according to claim 1,
2 wherein the one or more artificially configured cargo elements is a artificially configured
3 single cargo element comprising a artificially configured cargo element that defines a
4 man-made cavity that purposely contains a artificially configured fluid and or a
5 artificially configured quantum dot, forming a man-made design.
- 1
- 1 21. (Currently Amended): A non-naturally occurring light source according to claim 1,
2 wherein the ~~one or more~~ plurality of artificially configured cargo elements ~~are~~ is
3 purposely a plurality of artificially configured cargo elements.

- 1 22. (Currently Amended): A light source according to claim ~~22~~ 21, wherein the plurality of
2 artificially configured cargo elements are man-made light source cargo elements.
- 1 23. (Currently Amended): A non-naturally occurring light source according to claim ~~22~~ 21,
2 wherein the plurality of artificially configured cargo elements are man-made to be non-
3 light source cargo elements
- 1 24. (Currently Amended): A non-naturally occurring light source according to claim ~~22~~ 21,
2 wherein at least some of the plurality of artificially configured cargo elements are
3 artificially configured light source cargo elements.
- 1 25. (Currently amended): A non-naturally occurring light source according to claim ~~22~~ 21,
2 wherein at least some of the plurality of artificially configured cargo elements are
3 artificially configured non-light source cargo elements
- 1 26. (Currently amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the artificially configured cargo elements calculatedly respond to purposely and
3 artificially directed stimuli internal and or external to the man-made cage.
- 1 27. (Currently amended): A non-naturally occurring laser light source according to claim 3,
2 wherein a man-made vesicle and its contained artificially configured cargo elements
3 calculatedly respond to purposely and artificially directed stimuli that are internal and or
4 external to the man-made vesicle.
- 1 28. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein ~~the an~~ an artificially configured cargo element ~~contained ARC element also~~
3 contains an artificially configured fluid and or the man-made vesicle ~~contained~~
4 encapsulates an artificially configured fluid that contains one or more artificially
5 configured, performance altering dyes of any suitable type, with or without artificially
6 configured, performance altering scattering particles, or with or without other artificially
7 configured, performance altering dopants that calculatedly produce any chosen
8 adjustment to lasing characteristics, of any man-made design.
- 1 29. (Currently Amended): A non-naturally occurring laser light source according to claim ~~22~~
2 21, wherein a subset of the artificially configured cargo elements include one or more
3 artificially configured liquids without dopants or with one or more artificially configured

performance altering dopants type that calculatedly produce any chosen adjustment to lasing characteristics, of any man-made design.

30. (Currently Amended): A non-naturally occurring laser light source according to claim 22 21, wherein a subset of the artificially configured cargo elements include a artificially configured performance altering gas or artificially configured performance altering vapor without dopants or with one or more types of artificially configured performance altering dopants of any suitable-type that calculatedly produce any chosen adjustment to lasing characteristics, of any man-made design.

31. (Currently Amended): A non-naturally occurring laser light source according to claim 1, wherein a artificially configured cargo element cavity containing one or more artificially configured quantum dots comprise a artificially configured photonic dot type that calculatedly produces any chosen lasing characteristics, of any man-made design.

32. (Currently Amended): A non-naturally occurring laser light source according to claim 3, wherein a man-made vesicle cavity containing one or more artificially configured quantum dots comprises a artificially configured photonic dot type that calculatedly produces any chosen lasing characteristics, of any man-made design.

33. (Currently Amended): A non-naturally occurring laser light source according to claim 1, wherein ~~the~~ an optional, artificially induced internal or external man-made cavity deforming stimulus includes one or more artificially induced stimuli of any suitable chosen type, including but not limited to mechanical, chemical, fluidic, biological, photonic, thermal, sonic, and electrical or electromagnetic stimuli type that calculatedly produce any chosen lasing characteristics, of any man-made design..

34. (Currently Amended): A non-naturally occurring laser light source according to claim 1, wherein a man-made spherical cargo element cavity and or a man-made spherical vesicle cavity is optionally and artificially induced to be deforming in response to an artificially induced external stimulus, and by human design, the artificially deformed spherical cavity is purposely assumes the configuration of an asymmetric resonant cavity (ARC)

35. (Currently Amended): A non-naturally occurring laser light source according to claim 1, wherein a artificially configured spherical fluid droplet contained within a artificially configured spherical cargo element cavity and or contained within a artificially configured spherical vesicle cavity is optionally and purposely deformed in response to a

5 purposely deformed cargo element cavity and or to a purposely deformed vesicle cavity,
6 and the so purposely deformed spherical droplet thereby becomes, ~~an~~ by human design,
7 an asymmetric resonant cavity (ARC) type that calculatedly produces any chosen lasing
8 characteristics, of any man-made design.

1 36. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the artificially configured ARC optionally deforms from a first preferred
3 geometry to a second preferred geometry and the desired wavelength of the one or more
4 photons is dependent on the second geometry.

1 37. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein selectable, preferred quantum dot energy emissions are used to purposely tune
3 the Q-value and resonant frequency of the artificially configured ARC photonic dot type
4 to calculatedly produce any chosen Q-value and resonant frequency, of any man-made
5 design.

1 38. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein any chosen Q-value (whispering gallery modes) and resonant frequency of the
3 man-made laser are purposely tunable by using an artificially configured ARC to
4 calculatedly produce any chosen Q-value and resonant frequency of any man-made
5 design.

1 39. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the artificially configured ARC is a Q-switched laser, whose Q value is
3 purposely controlled to calculatedly produce any chosen Q value and resonant frequency,
4 of any man-made design.

1 40. (Currently amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the man-made laser light source is ~~an ultrabright,~~ a purposely tunable source of
3 light to calculatedly produce any chosen wavelength and/or intensity of light, of any man-
4 made design.

1 41. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein there is the ability to purposely couple a chosen high-Q/whispering gallery mode
3 out of the man-made ARC ~~with a directionality in order~~ to calculatedly produce any
4 chosen lasing directionality, of any man-made design.

- 1 42. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein it operates ~~at an ultralow threshold~~ by human design to calculatedly produce any
3 chosen lasing threshold, of any man-made design.
- 1 43. (Cancelled):
- 1 44. (Currently amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the man-made laser light source include one or more ~~is a therapeutic single task~~
3 and or multitask in vivo and or in vitro agents that are calculatedly induced to perform a
4 task.
- 1 45. (Cancelled):
- 1 46. (Cancelled):
- 1 47. (Cancelled):
- 1 48. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the man-made cage is bioengineered in whole or in part.
- 1 49. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the artificially induced self-assembling protein molecule is a purified clathrin
3 molecule.
- 1 50. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the man-made cage comprises artificially induced self-assembling synthetic
3 protein molecules.
- 1 51. (Currently amended): A non-naturally occurring laser light source according to claim 4,
2 wherein artificially configured receptors, adaptors, and or vesicle comprise natural and or
3 synthetic protein molecules.
- 1 52. (Currently Amended): A non-naturally occurring laser light source according to claim 4,
2 wherein the artificially configured receptors, adaptors, and vesicle are bioengineered at
3 least in part.
- 1 53. (Cancelled):
- 1 54. (Currently amended): A non-naturally occurring laser light source according to claim 3,
2 wherein the artificially configured vesicle is calculatedly coated at least partially ~~in a~~
3 substantially reflective material in one or more materials that purposely enhance any
4 chosen performance parameter of the vesicle, of any man-made design.

1 55. (Currently amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the man-made cage is calculatedly coated at least partially ~~in a substantially non-~~
3 ~~reflective material~~ in one or more materials that purposely enhance any chosen performance
4 parameter of the cage, of any man-made design.

1 56. (Cancelled):

1 57. (Cancelled):

1 58. (Currently amended): A non-naturally occurring laser light source according to claim 4,
2 wherein the artificially configured receptors, adaptors, and vesicle are at least partially
3 ~~metal~~ coated in one or more materials that purposely enhance any chosen performance
4 parameter, of any man-made design.

1 59. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the man-made cage is artificially induced to be greater than about one nanometer
3 in diameter.

1 60. (Cancelled):

1 61. (Cancelled):

1 62. (Currently Amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the man-made cage is artificially induced to be substantially symmetric with
3 respect to a plane in order to facilitate any chosen performance characteristic, of any
4 man-made design.

1 63. (Currently Amended): A non-naturally occurring laser light source element according to
2 claim 1, wherein the cage has been artificially ordered to substantially have icosahedral
3 geometry in order to facilitate any chosen performance characteristic, without of any
4 man-made design.

1 64. (Currently amended): A non-naturally occurring light source according to claim 1,
2 wherein by means of artificial inducement multiple artificially configured light sources
3 are physically and or functionally linked together in order to facilitate any man-made
4 design.

1 65. (Cancelled):

1 66. (Currently amended): A non-naturally occurring laser light source according to claim 1,
2 wherein the artificially configured laser light source, by means of artificial inducement,
3 forms a hybrid system upon its physical and or functional integration with other chosen
4 elements in vitro and or in vivo in order to facilitate any man-made design, of any man-
5 made design.

1 67. (Currently Amended): A method for forming a non-naturally occurring light source
2 comprising
3 artificially induced self-assembling protein molecules ~~into~~ that forming a man-made cage
4 defining a calculated, artificial, environment-isolating cavity, and locating one or more
5 artificially configured cargo elements within the man-made cavity, wherein,
6 at least one of the artificially configured cargo elements defines a man-made cavity that
7 contains an artificially configured fluid and/or a artificially configured quantum dot,
8 wherein the artificially configured cargo element cavity and or its contained artificially
9 configured fluid internally reflects one or more wavelengths of light in a specified response to an
10 artificially induced electromagnetic excitation of a purposely specified range.

11 and

12 wherein the man-made laser light source purposely emits one or more photons of light in
13 a specified frequency and or light intensity.

14 and further,

15 in optional response to an artificially induced stimulus, optionally deforming the
16 artificially configured cargo element cavity into a geometry that is, by human design,
17 characteristic of an asymmetric resonant cavity.

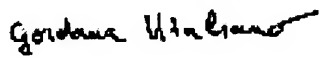
1 68. (Currently Amended): A laser light source according to claim 1 comprising,
2 a purposely functionalized cage for deliberately attaching one or more artificially
3 configured elements external to the man-made cage in order to facilitate any chosen
4 function, of any man-made design.

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6 Filed Pro Se

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